

WHAT IS CLAIMED IS:

1. A hollow piston used in a compressor, wherein the piston has an end wall that receives the pressure of a cylinder bore 5 of the compressor, the end wall having a substantially flat outer end face and an inner end face that is opposite to the outer end face, wherein the contour of the inner end face, from the radially outside portion toward the radially inside portion, first approaches the outer end face and then departs 10 from the outer end face.

2. The piston according to claim 1, wherein the inner end 15 face includes an annular concave surface, which is located about the axis of the piston, and a convex surface, wherein the convex surface is located radially inside and is joined to the annular concave surface.

3. The piston according to claim 2, wherein the annular 20 concave surface is a smooth curved surface, and wherein the cross section of the concave surface is uniform over the entire circumference about the axis of the piston.

4. The piston according to claim 3, wherein the cross 25 section of the annular concave surface is arcuate.

5. The piston according to claim 2, wherein the convex 30 surface is a smooth curved surface, and wherein the cross section of the convex surface is uniform over the entire circumference about the axis of the piston.

6. The piston according to claim 5, wherein the cross 35 section of the convex surface is arcuate.

7. The piston according to claim 1, wherein the convex

surface is annular about the axis of the piston, wherein the inner end face includes a flat surface that joins to and is located radially inside the annular convex surface.

5 8. The piston according to claim 1, wherein the end wall includes a plurality of ribs, wherein the ribs extend radially on the inner end face and are arranged at equal angular intervals.

10 9. The piston according to claim 1, further comprising a head piece and a body piece that is coupled to the head piece, wherein the head piece includes the end wall, and the body piece includes the remainder of the piston, and wherein, when the head piece and the body piece are separated, the inner end face is exposed.

15 10. A hollow piston used in a compressor, wherein the piston is accommodated in a cylinder bore of the compressor, the piston comprising:

20 an end wall that receives the pressure of the cylinder bore, the end wall having a substantially flat outer end face and an inner end face that is opposite to the outer end face, wherein a recess is formed in the outer end face; and
25 a protrusion that is formed on the inner end face to reinforce the end wall.

11. The piston according to claim 10, wherein the protrusion is aligned axially with the recess.

30 12. The piston according to claim 10, wherein the contour of the protrusion, from the radially outside portion toward the radially inside portion, first approaches the outer end face and then departs from the outer end face.

13. The piston according to claim 12, wherein the surface of
the protrusion includes an annular concave surface, which is
located about the axis of the piston, and a convex surface,
wherein the convex surface is located radially inside and is
joined to the annular concave surface.
5

14. The piston according to claim 13, wherein the convex
surface is aligned axially with the recess.

10 15. The piston according to claim 10, wherein the protrusion
is located on the axis of the piston.

15 16. The piston according to claim 10, wherein the protrusion
includes a plurality of ribs.

17. The piston according to claim 16, wherein the ribs extend
radially.

20 18. The piston according to claim 17, wherein the ribs are
arranged at equal angular intervals.

19. The piston according to claim 10, further comprising a
head piece and a body piece that is coupled to the head piece,
wherein the head piece includes the end wall, and the body
25 piece includes the remainder of the piston, and wherein, when
the head piece and the body piece are separated, the inner end
face is exposed.

20. A method for manufacturing a hollow piston used in a
compressor, wherein the piston includes a head piece and a
body piece that is coupled to the head piece, wherein the head
piece includes an end wall that receives the pressure of a
cylinder bore of the compressor and the body piece includes
the remainder of the piston, and wherein the end wall includes

a substantially flat outer end face and an inner end face that is opposite to the outer end face, the method comprising:

5 preparing a mold for forming the head piece, wherein the mold is designed such that a temporary protrusion that is not present in the finished head piece is formed on the inner end face;

pouring molten metal into the mold;

pushing the temporary protrusion before the molten metal solidifies to prevent formation of shrinkage cavities; and

10 removing the protrusion after the molten metal solidifies.

21. The method according to claim 20, wherein preparing of a mold includes designing the mold such that a reinforcing protrusion is formed on the inner end face, wherein the temporary protrusion is formed on the reinforcing projection.

SEARCHED INDEXED
SERIALIZED FILED

/